

Notice of Allowability

Application No.

10/699,737

Examiner

Kevin M. Bernatz

Applicant(s)

ARAI ET AL.

Art Unit

1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to interview of 12/28/06.
2. ☒ The allowed claim(s) is/are 1-16.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 20070104.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Examiner's Amendment

1. An Examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
2. Authorization for this Examiner's amendment was given in a telephone interview and/or FAX request with Mr. Leonid Thenor on December 28, 2006.

The application has been amended as follows:

- Claim 5, line 2: the dependency was changed from "claim 4" to "claim 10";
 - Claim 5, lines 2 – end of claim: the phrase "further consisting of ... and the second soft magnetic layer" was replaced with the phrase:
"wherein at least one of said first soft magnetic layer and said second soft magnetic layer is made of a crystalline material";
- Claim 7, line 2: the dependency was changed from "claim 6" to "claim 10";
 - Claim 7, line 2: the phrase "further consisting of" was replaced with the phrase "wherein said ferromagnetic layer is";
 - Claim 7, end of claim: immediately before the period at the end of the claim, the following phrase was inserted: ", and wherein said first soft magnetic layer is made of an amorphous material";
- Claim 8, line 2: the dependency was changed from "claim 6" to "claim 10";
 - Claim 5, lines 2 – end of claim: the phrase "further consisting of ... and the second soft magnetic layer" was replaced with the phrase:

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"wherein said first soft magnetic layer is made of an amorphous material";

- Claim 10, line 4: the word "comprising" was replaced by the phrase "consisting of";
 - Claim 10, line 5: the phrase "which includes at least an anti-ferromagnetic layer" was deleted;
 - Claim 10, line 16: after "said domain control layer", the word "further" was deleted;
 - Claim 10, line 19: after "consists of" the following phrase was inserted: "an anti-ferromagnetic layer and";
- Claim 14, lines 1-2: the dependency was changed from "claim 4" to "claim 5";
 - Claim 14, line 2: before the word "two", the word "said" was inserted;
- Claim 15, lines 1-2: the dependency was changed from "claim 6" to "claim 8";
 - Claim 15, line 2: before the word "two", the word "said" was inserted;and
- Claim 16, line 4: the word "comprising" was replaced by the phrase "consisting of".

Reasons for Allowance

3. The present claims are deemed allowable over the references of record since the references of record fail to disclose or render obvious a soft magnetic underlayer meeting the claimed structural limitations in combination with the claimed property limitations.

While the prior art of record disclose laminated soft magnetic layer structures comprising a plurality of soft magnetic layers interleaved with antiferromagnetic or additional magnetic layers, the prior art of record fails to teach or render obvious a structure comprising a soft magnetic underlayer consisting of a first soft magnetic layer, a domain control layer and a second soft magnetic layer formed in this order from said substrate (with or without intervening ferromagnetic layers per claims 10 and 16) wherein the energy of the exchange bias field Hex2 which is applied to said second soft magnetic layer is larger than the energy of the exchange bias field Hex1 which is applied to said first soft magnetic layer.

4. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Examiner's Comments

5. In order to better clarify the record, the Examiner wishes to note that the language of the present claims with regard to the soft magnetic underlayer consisting of

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a domain control layer consisting of an anti-ferromagnetic layer and first and second soft magnetic layers (and the optional ferromagnetic layers), excludes additional soft magnetic layers from being located between the perpendicular magnetic recording layer and the substrate, regardless of the relative location of an additional soft magnetic layer since such a layer would be deemed an "underlayer" since it is located under the perpendicular recording layer and between it and the substrate.

Conclusion

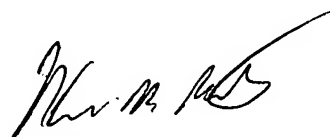
6. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Kevin M. Bernatz whose telephone number is (571) 272-1505. The Examiner can normally be reached on M-F, 8:30 AM - 5:00 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMB

January 4, 2007



Kevin M. Bernatz, PhD
Primary Examiner